

AVL Tree Deletion Practice Set

Basic Level

Focus: Simple deletions causing single rotations.

1. Initial AVL Tree: 30, 20, 40, 10, 25
 - Delete node 10 → Show tree and any rotations.
2. Initial AVL Tree: 50, 30, 70, 20, 40, 60, 80
 - Delete node 20 → Show tree balance step by step.
3. Initial AVL Tree: 10, 20, 30
 - Delete node 30 → Identify if RR rotation is needed.
4. Initial AVL Tree: 10, 20, 5, 4
 - Delete node 20 → Perform necessary rotation(s).
5. Initial AVL Tree: 15, 10, 20, 8, 12
 - Delete node 8 → Show tree after deletion.

Intermediate Level

6. Initial AVL Tree: 30, 20, 40, 10, 25
 - Delete node 40 → Determine if LR or RL rotation occurs.
7. Initial AVL Tree: 50, 30, 70, 20, 40, 60, 80

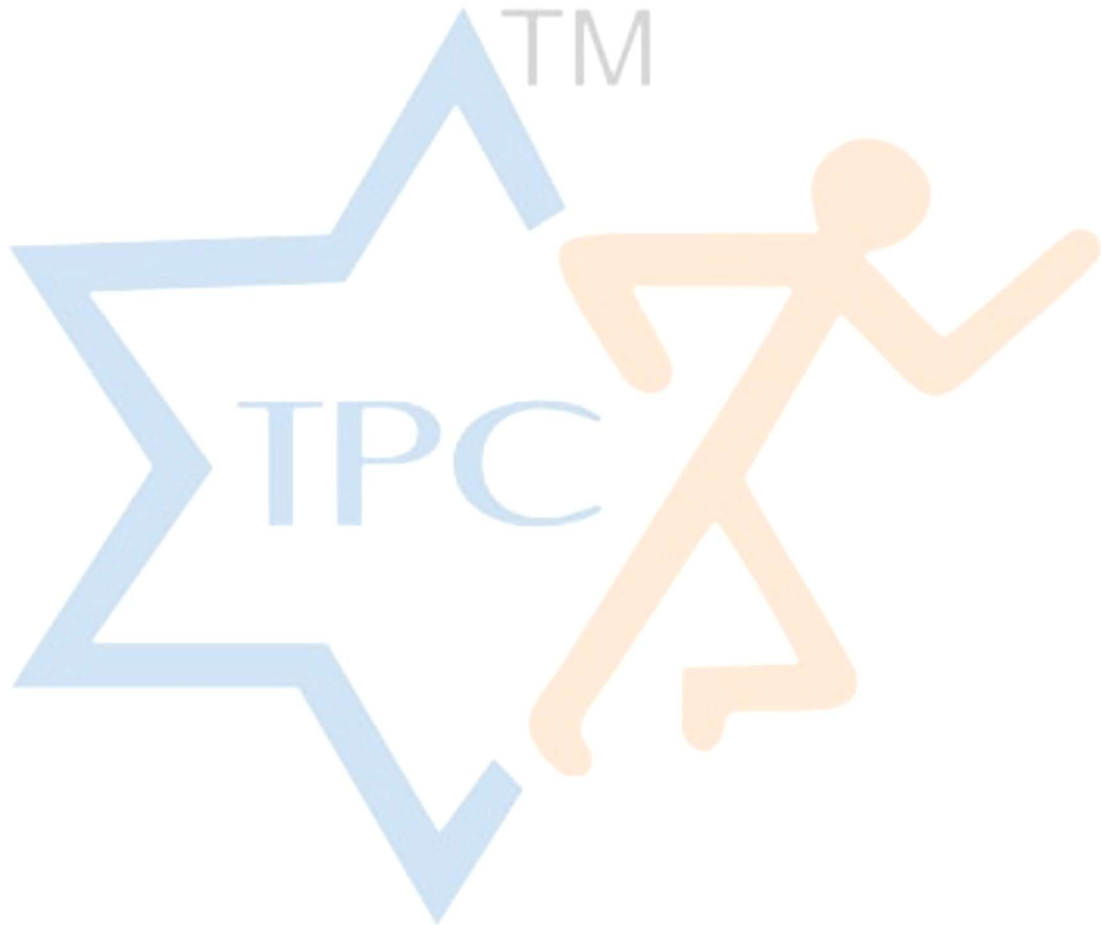
- Delete node 30 → Show balance factor and rotation(s).
8. Initial AVL Tree: 60, 40, 80, 30, 50, 70, 90
- Delete node 90 → Check for necessary rotation(s).
9. Initial AVL Tree: 25, 20, 30, 10, 22, 27, 35
- Delete node 10 → Perform rotations to maintain AVL balance.
10. Initial AVL Tree: 50, 20, 70, 10, 30, 60, 80
- Delete node 70 → Show all steps and final AVL tree.

Advanced Level

11. Initial AVL Tree: 50, 30, 70, 20, 40, 60, 80, 10, 25, 35, 45
- Delete nodes in order: 20, 70, 30 → Show tree after each deletion and rotations.
12. Initial AVL Tree: 40, 20, 60, 10, 30, 50, 70, 5, 15, 25, 35, 45, 55, 65, 75
- Delete nodes: 10, 30, 70, 50 → Show stepwise rotations and final balanced tree.
13. Initial AVL Tree: 30, 10, 50, 5, 20, 40, 60
- Delete nodes 5 and 60 → Check balance and rotations at each step.
14. Initial AVL Tree: 25, 15, 35, 10, 20, 30, 40
- Delete 15 → Which rotation(s) required? Draw the final AVL tree.

15. Initial AVL Tree: 50, 30, 70, 20, 40, 60, 80, 10, 25, 35, 45

- Delete 30 and 70 consecutively → Maintain AVL property and show rotations.



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